

SUBCHAPTER 6. RELEASE DETECTION

7:14B-6.1 General requirements for all underground storage tank systems

(a) Owners and operators of new and existing underground storage tank systems shall provide a method, or combination of methods, of release detection that:

1. Can detect a release from any portion of the tank and the connected underground piping that routinely contains product;
2. Is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition; and
3. Meets the performance requirements in N.J.A.C. 7:14B-6.5 or 6.6, with any performance claims and the manner of determination of the performance claims described in writing by the equipment manufacturer or installer. Permanent methods installed on or after September 4, 1990 shall be capable of detecting the leak rate or quantity specified for that method in the corresponding section of the rule with a probability of detection (Pd) of 0.95 and a probability of false alarm (Pfa) of 0.05.

(b) When a release detection method operated in accordance with the performance standards in N.J.A.C. 7:14B-6.5 and 6.6 indicates a release may have occurred, owners and operators shall notify the Department in accordance with N.J.A.C. 7:14B-7.

(c) Any underground storage tank system regulated pursuant to N.J.S.A. 58:10A-21 et seq. and 42 U.S.C. §§ 6991 et seq. that cannot apply a method of release detection that complies with the requirements of this subchapter shall complete the closure procedures in N.J.A.C. 7:14B-9.

(d) Each owner and operator of any underground storage tank system regulated pursuant to N.J.S.A. 58:10A-21 et seq., but not 42 U.S.C. §§ 6991 et seq., that cannot

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apply a method of release detection with the requirements of this subchapter shall complete the closure requirements of N.J.A.C. 7:14B-9 pursuant to a closure schedule that the Department has approved.

7:14B-6.2 Requirements for underground storage tank systems containing petroleum products and waste oil

(a) Owners and operators of petroleum underground storage tank systems shall provide release detection for tanks and piping by:

1. Monitoring tanks at least every 30 calendar days for releases using one of the methods listed in N.J.A.C. 7:14B-6.5(a)4 through 8 except that:

i. Underground storage tank systems that meet the performance standards in N.J.A.C. 7:14B-4.1 or 4.2, and the monthly inventory control requirements in N.J.A.C. 7:14B-6.5(a)1, (a)2, or (b) may use tank tightness testing (conducted in accordance with N.J.A.C. 7:14B-6.5(a)3); and

ii. Tanks with capacity of 550 gallons or less may use weekly tank gauging conducted in accordance with N.J.A.C. 7:14B-6.5(a)2.

2. Underground piping that routinely contains regulated substances shall be monitored for releases in a manner that meets one of the following requirements:

i. Underground piping that conveys regulated substances under pressure shall:

(1) Be equipped with an automatic line leak detector conducted pursuant to N.J.A.C. 7:14B-6.6(a)1; and

(2) Have an annual line tightness test conducted in accordance with N.J.A.C. 7:14B-6.6(a)2 or have monthly monitoring conducted in accordance with N.J.A.C. 7:14B-6.6(a)3.

ii. Underground piping that conveys regulated substances under suction shall either have a line tightness test conducted at least every three years in accordance with N.J.A.C. 7:14B-6.6(a)2, or use a monthly monitoring method conduct in accordance with N.J.A.C. 7:14B-6.6(a)3. No release detection is required for suction piping that is designed and constructed to meet the following standards:

(1) The below-grade piping operates at less than atmospheric pressure;

(2) The below-grade piping is sloped so that the contents of the pipe shall drain back into the storage tank if the suction is released;

(3) Only one check valve is included in each suction line;

(4) The check valve is located directly below and as close as practical to the suction pump; and

(5) A method is provided that allows compliance with (a)2ii(1) through (4) above to be readily determined.

(b) Owners and operators of petroleum underground storage tank systems that utilize separate product bearing supply and return lines shall provide release detection for tanks and piping as follows:

1. Tanks shall be monitored at least every 30 calendar days for releases using one of the methods listed in N.J.A.C. 7:14B-6.5(a)4 through 9; or

2. Owners and operators may use tank tightness testing conducted in accordance with N.J.A.C. 7:14B-6.5(a)3 at least every three years and check for the presence of water in the tank at the time of each product delivery.

7:14B-6.3 Requirements for underground storage tank systems containing hazardous substances other than petroleum products and waste oil

(a) Owners and operators of underground storage tank systems containing hazardous substances other than petroleum products and waste oil shall provide release detection that meets the following requirements:

1. Release detection at existing underground storage tank systems shall meet the requirements for petroleum underground storage tank systems in N.J.A.C. 7:14B-6.2. All existing underground storage tank systems containing hazardous substances other than petroleum products and waste oil shall meet the release detection requirements for new systems in (a)2 below.

2. Release detection at new underground storage tank systems containing hazardous substances other than petroleum and waste oil shall meet the following requirements:

i. Secondary containment systems shall be designed, constructed and installed to:

(1) Contain regulated substances released from the tank system until they are detected and removed;

(2) Prevent the release of regulated substances to the environment at any time during the operational life of the underground storage tank system; and

(3) Be checked for evidence of a release at least every 30 calendar days.

ii. Double-walled tanks shall be designed, constructed, and installed to:

(1) Contain a release from any portion of the inner tank within the outer wall; and

(2) Detect the failure of the inner wall.

iii. External liners (including vaults) shall be designed, constructed, and installed to:

(1) Contain 100 percent of the capacity of the largest tank within its boundary;

(2) Prevent the interference of precipitation or ground-water intrusion with the ability to contain or detect a release of regulated substances; and

(3) Surround the tank completely so that the upper perimeter of the liner is above the top of the tank.

iv. Underground piping shall be equipped with secondary containment that satisfies the requirements of (a)2i above (for example, trench liners, jacketing of double-walled pipe). In addition, underground piping that conveys regulated substances under pressure shall be equipped with an automatic line leak detector in accordance with N.J.A.C. 7:14B-6.6(a)1.

v. Other methods of release detection may be used if owners and operators:

(1) Demonstrate to the Department that an alternate method can detect a release of the stored substance as effectively as any of the methods allowed in N.J.A.C. 7:14B-6.5(a)2 through 6.5(a)8 can detect a release of petroleum;

(2) Provide information to the Department on effective corrective action technologies, health risks, and chemical and physical properties of the stored substance, and the characteristics of the underground storage tank site; and

(3) Obtain approval from the Department, through the issuance of a permit pursuant to N.J.A.C. 7:14B-10, to use the alternate release detection method before the installation and operation of the new underground storage tank system.

3. The provisions of 40 C.F.R. 265.193, Containment and Detection of Releases, may be used to comply with the requirements of (a)2 above.

7:14B-6.4 Requirements for underground storage tank systems in wellhead protection areas

(a) Owners and operators of underground storage tank systems located within wellhead protection areas shall provide release detection that meets the following requirements:

1. Release detection at existing underground storage tank systems shall meet the requirements for petroleum underground storage tank systems in N.J.A.C. 7:14B-6.2.

2. Release detection at new underground storage tank systems shall have secondary containment which are designed, constructed and installed in accordance with N.J.A.C. 7:14B-6.3(a)2.

7:14B-6.5 Methods of release detection for tanks

(a) Each method of release detection for tanks used to meet the requirements of N.J.A.C. 7:14B-6.2, 6.3 and 6.4 shall be conducted in accordance with the following:

1. Product inventory control shall be conducted monthly to detect a release of at least 1.0 percent of throughput plus 130 gallons on a monthly basis in the following manner:

- i. Inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank shall be recorded each operating day;
- ii. The equipment used shall be capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;
- iii. The regulated substance inputs shall be reconciled with delivery receipts by measurement of the tank inventory volume before and after delivery;
- iv. Deliveries shall be made through a drop tube that extends to within one foot of the tank bottom;
- v. Product dispensing shall be metered and recorded within the standards for meter calibration pursuant to N.J.A.C. 13:47B-1.20;
- vi. The measurement of any water level in the bottom of the tank shall be made to the nearest one-eighth of an inch at least once a month; and
- vii. The practices described in American Petroleum Institute Publication 1621, "Recommended Practice for Bulk Liquid Stock Control at Retail Outlets," may be used, where applicable, as guidance in meeting the requirements of N.J.A.C. 7:14B-6.5(a)1i through vi above.

2. Manual tank gauging shall meet the following requirements:

i. Tank liquid level measurements shall be taken at the beginning and ending of a period of at least 36 hours during which no liquid is added to or removed from the tank;

ii. Level measurements shall be based on an average of two consecutive stick readings at both the beginning and ending of the period;

iii. The equipment used shall be capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;

iv. Only tanks of 550 gallons or less nominal capacity may use manual tank gauging as the sole method of release detection. Tanks of 551 to 2,000 gallons may use the method in place of manual inventory control as set forth in (a)1 above. Tanks of greater than 2,000 gallons nominal capacity may not use manual tank gauging to meet the requirements of this subchapter; and

v. A leak shall be suspected and subject to the requirements of N.J.A.C. 7:14B-7 if the variation between beginning and ending measurements exceeds the weekly or monthly standards in the following table:

Nominal <u>Tank Capacity</u>	Weekly Standard <u>(one test)</u>	Monthly Standard <u>(average of four tests)</u>
550 gallons or less	10 gallons	5 gallons
551 to 1,000 gallons	13 gallons	7 gallons
1,001 to 2,000 gallons	26 gallons	13 gallons

3. Tank tightness testing shall be capable of detecting a 0.1 gallon per hour leak rate from any portion of the tank that routinely contains product while accounting for

the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

4. Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control shall meet the following requirements:

i. The automatic product level monitor test shall detect a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains product; and

ii. Inventory control (or another test of equivalent performance) shall be conducted in accordance with the requirements of N.J.A.C. 7:14B-6.5(a)1.

5. Testing or monitoring for vapors within the soil gas of the excavation zone shall meet the following requirements:

i. The materials used as backfill shall be sufficiently porous (for example, gravel, sand, crushed rock) to readily allow diffusion of vapors from releases into the excavation area;

ii. The stored regulated substance, or a tracer compound placed in the tank system, shall be sufficiently volatile to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank;

iii. The measurement of vapors by the monitoring device shall not be rendered inoperative by the ground water, rainfall, soil moisture or other known interferences so that a release could go undetected for more than 30 calendar days;

iv. The level of background contamination in the excavation zone shall not interfere with the method used to detect releases from the tank;

v. The vapor monitors shall be designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system;

vi. In the underground storage tank excavation zone, the site shall be assessed to ensure compliance with the requirements in (a)5i through iv and to establish the number and positioning of monitoring wells that will detect releases within the excavation zone from any portion of the tank that routinely contains product; and

vii. Monitoring wells shall be clearly marked and secured to avoid unauthorized access and tampering.

6. Testing or monitoring for liquids floating on the ground water shall meet the following requirements:

i. The regulated substance stored shall be immiscible in water and has a specific gravity of less than one;

ii. Ground water shall never be more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the underground storage tank system and the monitoring wells or devices is not less than 0.01 cm/sec (for example, the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials);

iii. The slotted portion of the monitoring well casing shall be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low ground-water conditions;

iv. All monitoring systems using screen and casing shall be constructed and permitted in accordance with the Subsurface and Percolating Waters Act (N.J.S.A.

58:4A-4.1 et seq.) unless constructed in the manner described in N.J.A.C. 7:14B-4.1(c);

v. Monitoring wells or devices shall intercept the excavation zone or are as close to it as is technically feasible;

vi. The continuous monitoring devices or manual methods used shall detect the presence of at least one-eighth of an inch of free product on top of the ground water in the monitoring wells;

vii. Within and immediately below the underground storage tank system excavation zone, the site shall be assessed to ensure compliance with the requirements in (a)6i through v and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product; and

viii. Monitoring wells shall be clearly marked and secured to avoid unauthorized access and tampering.

7. Interstitial monitoring between the underground storage tank and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:

i. For double-walled underground storage tank systems, the sampling or testing method shall detect a release through the inner wall in any portion of the tank that routinely contains product. The provisions outlined in the Steel Tank Institute's "Standard for Dual Wall Underground Storage Tanks" may be used as guidance for aspects of the design and construction of underground steel double-walled tanks;

ii. For underground storage tank systems with a secondary barrier within the excavation zone, the sampling or testing method used shall detect a release

between the underground storage tank system and the secondary barrier. The secondary barrier shall meet the following requirements:

(1) The secondary barrier shall consist of artificially constructed material that is sufficiently thick and impermeable (at least 10⁻⁶ cm/sec for the regulated substance stored) to direct a release to the monitoring point and permit its detection;

(2) The secondary barrier shall be compatible with the regulated substance stored so that a release from the underground storage tank system shall not cause a deterioration of the barrier allowing a release to pass through undetected;

(3) For cathodically protected tanks, the secondary barrier shall be installed so that it does not interfere with the proper operation of the cathodic protection system;

(4) The ground water, soil moisture, or rainfall shall not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 calendar days;

(5) The site shall be assessed to ensure that the secondary barrier is always above the ground water and not in a 25-year flood plain, unless the barrier and monitoring designs are for use under such conditions; and

(6) Monitoring wells shall be clearly marked and secured to avoid unauthorized access and tampering; or

iii. For tanks with an internally fitted liner, an automated device shall detect a release between the inner wall of the tank and the liner, and the liner shall be compatible with the substance stored.

8. Any other type of release detection method, or combination of methods, can be used if it can detect a 0.2 gallon per hour leak rate or a release of 150 gallons within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05.

9. The Department shall approve another method, through the issuance of a permit for a substantial modification issued pursuant to N.J.A.C. 7:14B-10, if the owner and operator can demonstrate that the method can detect a release as effectively as any of the methods allowed in (a)3 through 8 above. In comparing methods, the Department shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. The owner and operator shall obtain a permit issued by the Department pursuant to N.J.A.C. 7:14B-10 and comply with any conditions imposed by the Department on its use to ensure the protection of human health and the environment.

7:14B-6.6 Methods of release detection for piping

(a) Each method of release detection for piping used to meet the requirements of N.J.A.C. 7:14B-6.2 and 6.3 shall be conducted in accordance with the following:

1. Automatic line leak detectors which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm may be used only if they detect leaks of three gallons per hour at 10 pounds per square inch line pressure within one hour. An annual test of the operation of the leak detector shall be conducted in accordance with the manufacturer's requirements;

2. A periodic test of piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure; and

3. Any of the methods in N.J.A.C. 7:14B-6.5(a)5 through 8 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

7:14B-6.7 Release detection recordkeeping

(a) The owner or operator of an underground storage tank system shall develop written routine monitoring procedures which set forth the following:

1. The frequency with which the monitoring is to be performed;
2. The method and equipment used to conduct the monitoring;
3. The location at which the monitoring is to be performed;
4. The name and/or titles of the person responsible for performing the monitoring and maintenance of the monitoring system; and
5. Training in the use and maintenance of the monitoring equipment for the person responsible for performing the monitoring and maintenance of the monitoring system.

(b) The written routine monitoring procedure developed in accordance with (a) above shall be kept at the underground storage tank facility and made available for inspection by any authorized local, State or Federal representative at any time after installation of the monitoring system. The owner or operator of any existing monitoring system shall have the monitoring procedure available for inspection at any time after the monitoring system is installed.

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(c) All underground storage tank system owners and operators shall maintain records of all written performance claims pertaining to any release detection system used, and the manner in which these claims have been justified or tested by the equipment manufacturer or installer.

(d) All underground storage tank system owners and operators shall maintain records of all written documentation of all calibration, maintenance, and repair of release detection equipment permanently located on-site.

(e) The owner or operator shall, on a monthly basis, complete a summary of the results of all monitoring of the underground storage tank system and maintenance checks of the release detection equipment. This summary shall be made available for inspection by any authorized local, State or Federal representative.

(f) All underground storage tank system owners and operators shall maintain records of the results of any sampling, testing or monitoring, and monthly inventory reconciliations for as long as the site is operational.

(g) After a facility is closed pursuant to N.J.A.C. 7:14B-9, an owner or operator may make a written request to the Department at the address at N.J.A.C. 7:14B-5.6(d) to discard any such documents. Such a request shall be accompanied by a description of the documents involved. Upon written approval by the Department, the owner or operator may discard only those documents that are not required to be preserved for a longer time period.

(h) Upon receipt of a written request by the Department, the owner or operator shall submit to the department all records and documents or copies of the same required to be maintained by the Act, this chapter, permits, approvals, administrative orders, or judicial orders.

(i) The owner or operator of an underground storage tank system that is equipped with a monitoring system installed prior to September 4, 1990 shall maintain on site a certification from a Subsurface Evaluator certified pursuant to N.J.A.C. 7:14B-13, that the site conditions and locations of the monitoring devices comply with N.J.A.C. 7:14B-6.5 and documentation from the manufacturer that the physical properties of the hazardous substance stored are appropriate for the monitoring system utilized.

(j) All existing underground storage tanks that are equipped with a monitoring system in accordance with a valid New Jersey Pollutant Discharge Elimination System/Discharge to Ground Water permit and in compliance with this permit shall be exempt from the monitoring system reporting requirements of (b), (d) and (e) above. Compliance shall be determined by review of the issued permit, discharge monitoring reports and other required submittals.